date in his chapter devoted to the internal combustion engine, for he describes that latest, most ingenious, and economical pump due to Mr. Humphrey. This volume should prove very welcome to engineering students. The illustrations are excellent, and numerical exercises with their answers bear upon the principles discussed in each chapter.

(2) Many of those who have not given attention to the subject are still under one of two false impressions concerning destructors and the disposal of city waste. Either it is supposed that a destructor has no other utility than getting rid of the leavings of our streets and houses, or else that the calorific value of refuse is so low that to make electricity out of it would be impossible, or, in fact, to use the heat generated for any other useful purpose. The book before us will tend to dispel such impressions, and the reader will be grateful to Mr. Goodrich for putting together much information concerning the construction, working, and economy of destructors in Great Britain, the Continent, and America. It will be gratifying to English engineers to learn that the author is "able to place on record the proved superiority of the British destructor in many countries." He shows how, one by one, city authorities are abandoning the methods of land and sea dumping, and are adopting some kind of incineration as the best means for disposing of waste. In connection with sewage works, it has been found that, unless the lift is very high, the refuse burnt in a destructor will maintain steam for pumping, and Epsom is cited as a case in point where not only is the sewage of the town dealt with, but that of several large institutions of the London County Council. The tables of costs in connection with electricity works are especially instructive as showing what may be done towards reducing the coal bill by burning refuse. It would perhaps have been better if the analysis of refuse from American cities had been compared with that from English cities, and some deductions drawn therefrom. The descriptions of actual destructors, which occupy the greater part of the volume, show what strides have been made in recent years.

(3) This bulky volume on heating and ventilation should possess some interest to others than those connected with the heating and ventilating trades, but it is so loaded down with empirical formulæ that it requires a nice discrimination on the part of the reader to separate the chaff from the wheat. It might, indeed, be regarded as a treatise on the physics of the subject, though much of the subject-matter, especially the elementary matter at the beginning, might safely be omitted. It is generally superficial, though the author may be excused from this charge on the ground that he has to crowd in such a mass of material. A work of this description should prove advantageous, as so much of our heating and ventilation is done in a haphazard and unscientific manner.

PSYCHOLOGY IN BUSINESS.

Increasing Human Efficiency in Business. A Contribution to the Psychology of Business. By Prof. W. D. Scott. Pp. v+339. (New York: The Macmillan Company; London: Macmillan and Co., Ltd., 1911.) Price 5*s*. 6*d*. net.

THIS work is a genuine attempt to develop the application of reasoned methods to the organisation of the human element in industry and commerce. The opening chapter, on "The Possibility of Increasing Human Efficiency," sets out with the proposition that the output of work, whether of brain or muscles, by the average individual is very far below the maximum possible; that in most cases the individual would gain in health and happiness if his efficiency were judiciously developed, and that the general gain to the community through this development would be correspondingly great. In the concluding paragraph of this chapter the author says: "In the succeeding chapters will be described specific methods, many of which are employed by individual firms, but which could be used by other business men, to ensure their own efficiency and that of their employees. The experiences of many successful houses will be linked to the laws of psychology to point to the way that will bring about greater results from men." In the eight chapters which follow, "Imitation," "Competition," "Loyalty," "Concentration," "Wages," "Pleasure," "The Love of the Game," and "Relaxation" are treated of as means of increasing human efficiency. The final chapters deal with "The Rate of Improvement of Efficiency," "Practice plus Theory," "Judgment Formation," and "Habit Formation."

The author makes no attempt to define the sense in which he uses the term efficiency. For the most part it appears that he is considering efficiency from the point of view of the business organiser or from that of the type of manufacturer "whose razors *may* be made to shave, but certainly *must* be made to sell." But that other criteria of efficiency are not absent from the author's mind is evident from the outset, for in the first chapter the illustrations of efficiency are often culled from regions of human activity very far removed from commerce and industry. For example, on p. 13 the walk of Mr. Weston, aged 70 years, from New York to San Francisco, at

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an average rate of fifty miles a day, is described, while on p. 22 there is a quotation from Charles Darwin, in which he gives a very modest estimate of his own intellectual powers and endowments. Commenting on this estimate the author says:—

> "This is presumably an honest statement of fact, and, in addition, it should be remembered that Darwin was always physically weak, that for forty years he was practically an invalid and able to work for only about three hours per day. In these hours he was able to accomplish more, however, than other men of apparently superior ability who were able to work long hours daily for many years. Darwin made the most of his ability and increased his efficiency to its maximum."

The honesty of the author's appreciation of Charles Darwin is transparent, but its intellectual discrimination is not quite so clear.

To experienced leaders, whether in commerce or industry, there may not be much that is new in the ideas which are developed by the author, but there is much that is shrewd and stimulating. As a professor and teacher he has no doubt found that his methods make a useful appeal to the students with whom he has to deal. It will be interesting to see how far these methods will appeal to British teachers and students, and it is to be hoped that this work will be read by many of these.

OUR BOOKSHELF.

The Teaching of Physics for Purposes of General Education. By Prof. C. Riborg Mann. Pp. xxv + 304. (New York: The Macmillan Company; London: Macmillan & Co., Ltd., 1912.) 5*s*. 6*d*. net.

THIS book may be described as a skilful compilation of quotations. The first four chapters, which are well written and interesting, trace the rise of the teaching of physics in American high schools to its present unsatisfactory condition, when, if we may trust the author, "all teachers are constantly amazed at the inability of the pupils to apply their pure physics even to the physical problems of their daily life, to say nothing of their inability to think scientifically on any problems outside of physics."

It is maintained, probably correctly, that the more descriptive and objective introductory teaching prescribed thirty years ago was better suited to the purposes of a general education than the methods of premature generalisation into which it seems to have drifted in American schools.

The second part of the book is an irrelevant and almost grotesque attempt to distort history to suit a mistaken and misleading view of the influence of Greek thought on physical science, and is not worth serious attention.

In the third part, under "Hints at Practical Applications," we find Prof. Mann deprecating the use of test-questions that call for an accurate knowledge of the use of scientific terms and definitions, and advocating instead what he calls "vital problems" such as "Why are there door-knobs on doors?" "Why has no one ever found the pot of gold that lies buried at the end of the rainbow?"—"When you come down stairs, do you get back the work done going up? How?" We can scarcely imagine worse advice.

A. M. W.

The Beyond that is Within, and Other Addresses. By Prof. Émile Boutroux. Translated by Jonathan Nield. Pp. xvi + 138. (London: Duckworth and Co., 1912.) Price 3*s*. 6*d*. net.

IN the first address, which supplies a title for the book, the author discusses the general question of psychical research "proof," and admirably makes clear that no fact, however strange, can prove the existence of a veritable Beyond; though he admits that there is evidence which seems to imply "a life beyond this life." By "a veritable Beyond" he means a state which has no analogies with our present existence. On the whole he is inclined to rely on intuition—the feeling of the "Inner Beyond"—which the modern doctrine of the subliminal self has again made respectable and reasonable. "The subliminal self may put us in communication, not only with beings like or inferior to ourselves, but with superior existences. . . ."

In the next address, "Morality and Religion," M. Boutroux looks forward to a reconciliation of these combatants. Morality is practical, but Religion supplies the impetus from the feeling-side, and both are necessary.

The last is a short address on the relation of philosophy to the sciences. The author pleads for a philosophy which shall reason on knowledge and on life, without laying down any closed system in the way of science.

A Guide to the Dissection of the Dog. By Dr. O. C. Bradley. Pp. viii + 241. (London: Longmans, Green and Co., 1912.) Price 10*s*. 6*d*. net.

CREDIT is due both to the author and the publishers of this work for having removed a serious obstacle to the proper study of the anatomy of the dog. Hitherto in this country veterinary students and others who wished to dissect the dog could find no better guide than the somewhat meagre descriptions contained in the systematic text-books on veterinary anatomy, mainly devoted to the anatomy of the horse. In this respect German students have been more favourably placed since the publication in 1891 of Ellenberger's systematic treatise on the anatomy of the dog, but even that work, excellent as it is, is of little value as a dissection guide. One cannot pay Dr. Bradley's work a higher compliment than to say that it forms a worthy companion to the text-book of Ellenberger. The order in which the different parts of the body are dealt with appears to be convenient, and the text is concise and clear. The illustrations, sixty-nine in number, are good, although many of them are semi-diagrammatic.

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